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A REVISION OF THE
AMERICAN VULTURES
OF THE GENUS CATHARTES

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A REVISION OF THE AMERICAN VULTURES OF THE GENUS CATHARTES

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Turkey vultures, found widely throughout the Americas, though easily recognized in life or when freshly killed, pose many difficulties in identification when preserved as museum specimens. The color differences of the bare head and upper neck that separate the species, and in the case of the red-headed group some of the subspecies, change soon after death to a dull hue discouragingly similar in all. My personal interest in these birds began in 1920 when I first encountered the yellow-headed vulture in life in the Chaco of Argentina and Paraguay, and in the report on that expedition I ventured to publish a synopsis that covered what I had been able to learn of the genus as a whole (Wetmore, 1926, pp. 86-91). The subject has remained one of intriguing interest, in large part because of its difficulties, and I have continued to examine birds of the genus whenever possible. A preliminary account of the yellow-headed group has been covered in another study (Wetmore, 1950, pp. 415-417). The account that follows is based on data from several hundred museum skins, in addition to many observations on living individuals that I have seen and have collected during my expeditions in tropical regions.

In these studies I have been indebted to many individuals, among whom I should mention especially Mr. J. D. Macdonald and other authorities of the British Museum (Natural History) for privileges in connection with their collections, in particular the material that had been studied by Harry Kirke Swann. Dr. G. Rokitsansky of the Naturhistorisches Museum in Vienna made arrangements that, in his absence, allowed me to examine the series of yellow-headed vultures in that institution. The collections in the American Museum of Natural History and the Chicago Natural History Museum have been of repeated assistance. I have to thank especially Dr. George H. Lowery, Jr., for the loan of specimens that included two of the new form described in this paper. Dr. Emerson Kemsies, in charge of

the bird collections in the Museum of the University of Cincinnati, very kindly made special arrangements that allowed study of the large series of vultures in the Herbert Brandt collection under his charge. Curators of other collections have aided in allowing examination and, when necessary, in the loan of skins for comparison with the series in Washington.

The account that follows is a summary of the characters and distribution of the species of the genus, with their geographic races.

CATHARTES AURA (Linnaeus): Turkey Vulture

Bare head and neck in adult birds in life red, in one race lined narrowly across the back of the cranium with yellowish or greenish white; skin of the side and front of the neck near its base smooth, without caruncles; upper hindneck in adult bare.

Found in the Americas from the northern temperate area of North America through the tropics to the temperate regions of the far south where these birds range to Patagonia, Tierra del Fuego, and the Falkland Islands.

CATHARTES AURA SEPTENTRIONALIS Wied

Cathartes septentrionalis Wied, Reise Nord-Amer., vol. 1, 1839, p. 162. (Fox River, near New Harmony, Indiana.)

Cathartes aura carolinensis "Townsend" Friedmann, U.S.Nat.Mus. Bull. 50, pt. 9, Sept. 29, 1950, p. 44. (Nomen nudum; lapsus calami for *Cathartes aura septentrionalis* as listed by C. W. Townsend, Mem. Nuttall Orn. Club, no. 5, Aug. 1920, p. 97.)

Characters.—Borders of lesser wing coverts paler than in other races, averaging wider, and therefore more prominent; distal secondaries with paler brown borders and tips; size large, wing 509-545 mm.

Measurements.—Males (43 specimens), wing 509-545 (526), tail 250-288 (267), culmen from cere 22.7-26.8 (24.6, average of 40), tarsus 61.7-73.0 (66.0) mm.

Females (35 specimens), wing 518-552 (535), tail 255-292 (275), culmen from cere 23.7-27.2 (25.3, average of 29), tarsus 61.7-73.0 (66.0) mm.

Range.—Breeds in eastern North America from eastern Minnesota (Itasca County, rarely), central Wisconsin (Oconto County, one record), south-central Michigan, southern Ontario, central New York, southwestern Massachusetts, and Connecticut, south through eastern Iowa, Missouri, and Arkansas to Louisiana, the Gulf coast, and southern Florida: Intergrades with *C. a. meridionalis* in Minnesota, Kansas, Oklahoma, and eastern Texas.

Winters from the Ohio Valley, central Maryland (rarely in the intervening mountains), and New Jersey south to southern Texas (Rio Grande City), the shores of the Gulf of Mexico east to southern Florida, and the southeastern Atlantic coast.

Recorded casually in southern Arizona (Pima County), Quebec, New Brunswick, Nova Scotia, Labrador, Newfoundland, eastern Massachusetts, Vermont, New Hampshire, and Maine: Accidental in Bermuda (one record, December 1853).

Remarks.—The paler appearance of the wing coverts, due to the broad, light brownish-gray edgings of the individual feathers, separates this form from the western race *meridionalis*, in which many individuals are of equal size. Measurements of *septentrionalis* from birds taken during the breeding season indicate a cline from the smallest in Florida to the largest in the northern area of the range. The smaller individuals in the resident group in southern Florida are within the upper limits of the size range of *Cathartes aura aura*, but all that I have seen have the paler margins of the wing coverts of *septentrionalis*. The large northern individuals move in winter throughout the south to the southern limits of the form.

Through the kindness of Dr. W. J. Breckenridge I have had the loan of specimens from Minnesota which indicate that the birds of the small group in Itasca County, in the northeastern part of the State, while intermediate toward the western form, are nearer *septentrionalis*. The same is true of material from Douglas County in north-eastern Kansas. These points serve to indicate a general border area between the eastern and western forms.

CATHARTES AURA MERIDIONALIS Swann

Cathartes aura meridionalis Swann, Syn. Accipitres, pt. 1, Sept. 28, 1921, p. 3. (Santa Marta, Province of Magdalena, Colombia.)

Cathartes aura teter Friedmann, Proc. Biol. Soc. Washington, vol. 46, Oct. 26, 1933, p. 188. (Riverside, California.)

Characters.—Edgings of the lesser wing coverts definitely darker, browner, and somewhat less in extent, so that they are less prominent than in *C. a. septentrionalis*; distal edgings and tips of secondaries averaging very slightly darker; size large, but with the maximum and average less than in *septentrionalis*.

Measurements.—Males (25 specimens), wing 487-528 (509), tail 237-268 (253), culmen from cere 22.2-26.6 (24.5), tarsus 60.6-65.1 (63.7) mm.

Females (16 specimens), wing 495-526 (511), tail 245-272 (259), culmen from cere 24.0-26.3 (25.2), tarsus 62.5-67.6 (64.9) mm.

Range.—Breeds in western North America from southern British Columbia, central Alberta, south-central Saskatchewan, and southern Manitoba south through California (except the lower Colorado River Valley) to southern Baja California, south-central Arizona, south-central New Mexico, and south-central Texas; east to south-western Minnesota, western Iowa (Audubon), and central Kansas.

Winters from California and Nebraska southward, moving in migration through Central America in vast flocks: Some continue beyond Panamá to South America from Colombia (Santa Marta; Río Guatiporí, 3,000 meters elevation, in the Sierra Nevada de Santa Marta; El Tambo, Cauca), and central Venezuela (Caicara), south to Ecuador (Monji), the Paraguayan Chaco (Orloff), and southern Brazil (Salto Grande, Rio Paranapanema, São Paulo).

Casual in Florida (Merritts Island; Cape Sable).

Remarks.—Swann, in an early review of the turkey vultures (1921, pp. 3-4) held that the birds of North America, Central America (with the exception of Isla Cozumel), and the West Indies were alike, and, therefore, listed them as *Cathartes aura aura* (Linnaeus). He described the Cozumel bird as *C. a. insularis* on supposed smaller size and also separated the populations of western South America from Colombia to northern Chile and Argentina under the name of *Cathartes aura meridionalis*, which he listed as "subsp. nov. [nom. nov. *Cathartes aura aura* (Linn.) ed. 1, et auct. plur. Type loc. sugg. Colombia.]" For this he selected as type a bird in the collections of the British Museum (Natural History). This is a specimen originally in the Salvin and Godman collection, B.M. no. 87.5.1.11, ♂, taken at Santa Marta "U.S. of Colombia," by F. A. A. Simons, February 27, 1879. A label in small script, written by the collector, with ink that has faded until some words are illegible, reads in part as follows: "No. IV.I Sta Marta Sex:♂. 2 N.V. aura. Considered a great boon to the town, as they keep the place clear of all smelling meat, etc. Flesh about head fine pinky flesh color giving it the appearance from a distance of a fine red head. February 27, 1879."

On examination I have found that this type is an adult bird with light brown edgings on all the wing coverts, and the following measurements: Wing 525, tail 266, culmen from base 24.7, tarsus 66.3 mm. It is obviously a migrant from North America and as evidently one from the western part of the continent. The name *meridionalis* Swann must therefore replace the later *teter* described by Friedmann, who was the first to note that the western race was distinct. It will

be observed in the winter range of this bird as given above that I have seen another specimen of this race taken at 3,000 meters elevation in the Sierra Nevada de Santa Marta (U.S.N.M. no. 386705), in addition to others from Venezuela, Ecuador, Paraguay, and Brazil.

As indicated under *C. a. septentrionalis*, intergradation with that form in the upper Mississippi Valley is shown in birds from Minnesota where those from Dawson County in the west-central part of the State are intermediate, but are nearer *meridionalis*, as are specimens farther south from central Kansas and west-central Oklahoma (Mt. Scott, Comanche County). Allocation of the breeding birds from southeastern Kansas and eastern Oklahoma from present information is uncertain.

The diagnosis and measurements given above have been taken from birds presumed to be on or near their breeding grounds. *Cathartes a. meridionalis* shows the same cline of steadily increasing size from south to north as is found in the eastern race. To the south there is no sharp break between this form and *C. a. aura*. In fact, the type specimen of *teter* Friedmann, from Riverside, about 50 miles east of Los Angeles in southern California, is on the borderline between the two in size and color.

Occasionally, birds from arid regions taken late in summer show fading in the color of the wing coverts so that they appear lighter than normal. At first glance these may suggest *septentrionalis* but on comparison with specimens of that race in similar stage of plumage are definitely browner. First fall birds of *meridionalis*, and also of typical *aura*, often show narrow, grayish-white edgings on the middle wing coverts.

CATHARTES AURA AURA (Linnaeus)

Vultur Aura Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 86. (Veracruz, México.)

?[*Aquila*] *nudicollis* Ritter, Naturhist. Reise Westind. Insel Hayti, 1836, p. 155. ("Geyer mit nackenden Halse": No further description.)

Cathartes aura insularis Swann, Syn. Accipitres, pt. 1, Sept. 28, 1928, p. 3. (Isla Cozumel, Quintana Roo, México.)

Characters.—Similar in color to *C. a. meridionalis*, but smaller, with shorter wings and tail.

Measurements.—(Taken from birds assumed to be on or near their breeding grounds.) Males (21 specimens), wing 462-495 (478), tail 226-249 (238), culmen from cere 22.8-25.1 (22.6), tarsus 58.8-64.5 (62.4) mm.

Females (12 specimens), wing 471-495 (482), tail 231-251 (241), culmen from cere 22.7-25.9 (24.1), tarsus 58.6-66.5 (62.5) mm.

Range.—Breeds from the lower Colorado River Valley (Riverside Mountain, Calif.), southern Arizona (Yarnell, Yavapai County; Vail, Pima County; Bisbee, Cochise County), southern New Mexico (San Luis Mountains), and southern Texas (Delaware Creek; Limpia Creek; Chisos Mountains; Starr County) south into Sonora, Chihuahua, and Coahuila (southern limits on the Mexican tableland uncertain), through the Caribbean slope of tropical and subtropical México, and Central America to Honduras, probably to central Costa Rica; the Bahama Islands (Mangrove Cay, Grand Bahama, Abaco, Andros), Cuba, Isle of Pines, Jamaica, and southwestern Puerto Rico (introduced): On the mainland intergrades on the north with *C. a. meridionalis*.

In migration and winter south through Panamá to Darién (Jaqué), including the Pearl Islands (Isla San José).

Remarks.—It is evident that the division in two races, *meridionalis* and typical *aura*, appears arbitrary, with a considerable area of overlap. However, such separation seems required in view of the disparity between the populations with small size of the far south and those decidedly larger of the north, the range in the wing in males being from 462 to 525 mm. and in females from 471 to 526 mm. Smaller size is coupled with tropical and lower subtropical zone range, against the mainly Sonoran and Temperate Zone distribution of the larger, northern birds. It is probable that there are other intangible factors of difference involved that have not been evident in examination of museum specimens.

The criterion for the size limits assigned to the southern subspecies has been fixed through measurements of specimens from the resident birds of the Greater Antilles, where there is no confusion through the periodic invasion of northern migrants as is the case in the continental breeding range. The dimensions of the Antillean group then have been the yardstick used to outline the breeding range assigned to the subspecies *aura* on the mainland. Division between this group and *meridionalis* comes near the boundary between México and the United States, with the smaller southern form penetrating a short distance to the north of this line. The southern limit indicated is tentative since no specimens definitely known to be on their breeding grounds have been seen from southern Central America. I have taken winter migrants in eastern Darién so that this race may range to Colombia.

Some specimens from Cuba have the edgings on the wing coverts slightly paler than normal. It is possible that this may be due to a factor of *septentrionalis* relationship (in which this paler color is definite) from the population that is found in nearby Florida.

Immature birds in *aura*, like those of *meridionalis*, sometimes have the middle coverts edged lightly with grayish white.

CATHARTES AURA RUFICOLLIS Spix

Cathartes ruficollis Spix, Avium Spec. Nov. Brasiliam, vol. 1, 1824, p. 2. (Interior of Baía and Piauí, Brazil.)

Oenops pernigra Sharpe, Cat. Birds Brit. Mus., vol. 1, 1874, p. 26. (South bank of the River Amazon, about 100 miles above the Río Negro, Brazil.)

Cathartes aura "Illig." d'Orbigny, Voy. Amér. Mérid., vol. 4, Oiseaux, 1834, pp. 38-42, pl. 1, fig. 3. (Amérique méridionale et s'étend même dans l'Amérique du nord. Après l'avoir perdu de vue au 28.^e degré de latitude sud dans la province de Corrientes, nous ne l'avons plus retrouvé que dans la Patagonie, au 41.^e degré.)

Cathartes orbigny Sztolcman, Ann. Mus. Polonici Hist. Nat., vol. 4, no. 3, Dec. 1, 1925, p. 322. (Based on d'Orbigny, cit. supra.)

Characters.—Definitely blacker above and below than the northern subspecies *C. a. septentrionalis*, *C. a. aura*, and *C. a. meridionalis*; under surface of body decidedly black; borders of wing coverts very dark brown, darker than in *aura*; in life, head and neck dull red, with several distinct transverse yellowish white or greenish white lines across the posterior surface of the crown and the nape; adult usually with an irregular area of yellowish white in the center of the crown.

Measurements.—Males (18 specimens), wing 476-508 (490), tail 235-265 (254, average of 17), culmen from cere 21.9-24.3 (23.2, average of 16), tarsus 60.0-64.9 (62.4, average of 17) mm.

Females (21 specimens), wing 475-509 (491), tail 235-264 (247), culmen from cere 22.3-26.6 (23.7, average of 20), tarsus 60.4-68.0 (63.8, average of 20) mm.

Range.—Throughout the tropical zone in Panamá; on the Pacific slope from near the Costa Rican boundary in western Chiriquí (including Isla Coiba, Isla Taboga, and the Archipiélago de las Perlas), and on the Caribbean side from the Canal Zone eastward; across northern Colombia (specimens seen from Córdoba, Antioquia, Bolívar, Magdalena, and Guajira); and from northern Venezuela south through South America east of the Andes to northern Argentina (Formosa, Chaco, Santa Fé), Uruguay, and southern Brazil; west to southeastern Colombia, eastern Perú, and eastern Bolivia: Northern limit in Central America uncertain, probably in Costa Rica.

Remarks.—The blacker body color, darker brown edgings on the wing coverts, and the head markings in life, where the dull red (plain in the three northern subspecies) is variegated by cross lines of yellow to whitish or greenish yellow across the back of the crown and the hindneck, with addition of an ivory-colored area in the center of the crown, readily identify this distinct race. I became familiar with the differences in plumage markings in my first observations of these turkey vultures in the field in South America, but it was not until April 1940 that I noted the interesting colors on the head in a bird taken in the foothills of the Serranía Macuire in the Guajira Peninsula, northeastern Colombia. My first report outside South America was of an immature individual shot in 1944 on Isla San José in the Gulf of Panamá, which I identified by plumage characters as *ruficollis*. At the time I believed that this bird was a wanderer from breeding grounds in Colombia. As further field work made me familiar with these vultures in Panamá, additional records have served to establish *ruficollis* as the breeding form across the isthmus on the Pacific slope from Darién on the Colombian border to the western province of Chiriquí, where I have recorded it within a few miles of the Costa Rican boundary. On the Caribbean side I have identified it from the Chagres Valley at Gamboa and Juan Mina in the Canal Zone, and in the San Blas from Mandinga, Armila, and Puerto Obaldía. The resident form to the west through the provinces of Colón and Bocas del Toro on this slope remains to be established.

There seems little doubt that *ruficollis* will be found in Costa Rica, and it may range beyond far to the north on the Pacific slope. While there are no specimens to prove this, van Rossem (1946, pp. 180-181) has reported the head color in two male turkey vultures that he shot on March 14, 1946, but did not preserve, on Isla Lechuguia (also called Isla de los Burros) off Topolobampo, northern Sinaloa, as follows: "Head, neck, cere (including encirclement of nostrils), about 'Carmine' or 'Eugenia Red'; extreme lower bare portion of neck at juncture with feather line yellowish orange, the color mostly concealed and obvious only on examination; transverse corrugations across crown between eyes and small tubercles on preocular region, ivory white; transverse corrugations of hind crown, nape, and sides of head grayish blue (about 'Deep Green-blue Gray')." Van Rossem explains that "not having a color chart at the time, the color terms in quotes are an approximation based on field notes." With this in mind, it is evident that the description is similar to the condition found in *Cathartes a. ruficollis*. The measurements that van Rossem

gives of wing, 490 and 500 mm., and of tail, 244 and 250 mm., also agree with those of that race.

Several from the Chaco of Paraguay in the Brandt collection at the University of Cincinnati are somewhat larger than the usual measurements of this race and also show lighter coloration—grayish brown to grayish white—on the outer webs of the distal ends of the secondaries. Otherwise these birds agree with *ruficollis* in blacker body color and darker coloration of the neck ruff. They appear to represent a population intermediate toward *jota* to the west. The differences are quite distinct and if found to have a broad enough distribution may warrant recognition by name. This, however, may be established only with more information, since from present data it is not certain that part or all of these larger birds may not be cold weather migrants from some Andean area to the west, and, therefore intermediates between *ruficollis* and *jota*.

In my earlier review (1926, p. 89) the name *ruficollis* was established as the proper designation for this race. Among the synonyms listed above I have examined the type of *Oenops pertinax* Sharpe in the British Museum. The specimen has an original label that states "Collected by A. R. Wallace. 1851, Upr. Amazon." Another tag reads "South bank about 100 miles above the Rio Negro." The bird is a typical example of *ruficollis*. The next name in the synonymy, *Cathartes orbigny* Sztolcman, is based, as indicated, on an account of *Cathartes aura* by d'Orbigny. While this, in part, is not specific, the head colors in the description, and in the accompanying colored plate, are those of *ruficollis*. The plate however shows three lines of prominent, rounded caruncles on the side of the neck at the base so that part of d'Orbigny's account may refer also to one of the species of the yellow-headed group.

It is of interest to observe that Azara (1802, p. 27) in his account of the Acabiray also describes in detail the head colors of *ruficollis*.

CATHARTES AURA JOTA (Molina)

Vultur [sic] *Jota* Molina, Sagg. Stor. Nat. Chili, 1782, pp. 265, 343. (Chile.)
Cathartes occipitalis Sztolcman, Ann. Zool. Mus. Polonici, vol. 4, no. 4, Dec. 1, 1925, p. 319. (Huambo, 1,100 meters elevation, 80 kilometers southeast of Chachapoyas, Perú.)

Characters.—Secondaries margined in variable amount with light gray, in some these edgings extended to the greater coverts, and in a few to the outermost middle coverts; slightly browner above and below than *ruficollis*; size large.

Measurements.—Males (12 specimens), wing 514-546 (521), tail 252-271 (262), culmen from cere 22.6-26.1 (24.1), tarsus 62.4-71.0 (65.7) mm.

Females (6 specimens), wing 511-535 (523), tail 250-281 (260), culmen from cere 23.7-25.3 (24.4), tarsus 64.0-68.7 (66.1) mm.

Range.—From southern Colombia (where it appears to intergrade with *C. a. ruficollis*) south through the Andes, and the adjacent valleys, in Ecuador, Perú (Lago Junín), and Bolivia (Cochabamba; Choro) to southern Chile (Angol; Temuco; Puerto Montt; Estrechos de Magallanes), western and southern Argentina (Tucumán; La Rioja; western Mendoza; General Roca; Río Negro).

Remarks.—In central Colombia this form appears to intergrade with *C. a. ruficollis* to produce a bird of smaller size, and browner, less deeply black color on the body. Some specimens that come from the interior of the Chaco in northwestern Paraguay also are similar to these supposed intergrades in size and color.

Molina's description has been allocated to this interior form so that the designation by Swann (1921, p. 4) of Concepción, on the coast of Chile, as type locality is erroneous. The northern and also the eastern limits of this subspecies remain to be clearly assigned.

CATHARTES AURA FALKLANDICA (Sharpe)

Catharista falklandica Sharpe, Ann. Mag. Nat. Hist., ser. 4, vol. 11, no. 62, Feb. 1873, p. 133. (Berkeley Sound, East Falkland, Falkland Islands.)

Characters.—Similar to *C. a. jota*, but grayish edgings on wings usually more extensive; size smaller.

Measurements.—Males (5 from the Falkland Islands), wing 485-508 (499), tail 250-265 (254), culmen from cere 23.5-25.1 (24.1), tarsus 60.5-71.7 (67.1) mm.

Males (7 from coastal areas and islands, Ecuador to Chile), wing 460-507 (485), tail 220-257 (240), culmen from cere 22.7-24.8 (23.9, average of 6), tarsus 62.0-66.5 (65.3) mm.

Females (3 from Falkland Islands), wing 505-510 (508), tail 258-272 (265), culmen from cere 23.7-26.9 (24.8), tarsus 65.3-69.0 (66.8) mm.

Females (3 from islands off Ecuador and Perú), wing 466-478 (474), tail 223-225 (224), culmen from cere 23.4-25.7 (24.6), tarsus 65.5-69.6 (68.1) mm.

Range.—Falkland Islands; north along the western coast of South America to Chile (Isla Mocha, Penco), Perú (Talara, Islas de Chincha), and Ecuador (Isla Jambelí, Isla La Plata).

Remarks.—This race and *jota* are less black on the lower surface than *ruficollis*. While birds in the range outlined are similar in grayish-white markings on the wings to *jota*, and so have been included under that name by recent authors, they differ definitely in smaller size. The coastal area that they inhabit from Chile northward appears to be invaded by wandering individuals of the inland race *jota*, which has led to confusion in understanding. It may be supposed that the population is one adapted to maritime conditions influenced by colder oceanic waters.

Those found along Perú and Ecuador appear smaller than those of the Falklands and may prove separable as another form when more is known about them.

CATHARTES BURROVIANUS Cassin: Yellow-headed Turkey Vulture

Bare area of front and side of neck with numerous small papillae or caruncles, mainly low down toward the feather line, in lesser number toward the base of the head; prominent in freshly killed birds, visible in museum specimens as small, wartlike processes; hindneck feathered to base of cranium; in life, head and neck yellow and orange, varied by prominent blue markings bordered more or less with green on the crown. Color of dorsal surface dull black, with feathers tipped prominently with fuscous and fuscous-black; brownish black below; metallic bluish or greenish sheen less extensive than in the larger species with similar head colors. Development of the neck papillae begins in young birds as soon as they are on the wing.

Until I collected specimens in western Panamá in 1948, which led to the proper allocation of Cassin's ancient name *burrovianus* of 1845 (Wetmore, 1950, pp. 415-417) this species was believed to be restricted in range to South America. In the abundant material now available from the region between northeastern México and northern Argentina two geographic races distinguished by differences in size, may be recognized.

CATHARTES BURROVIANUS BURROVIANUS Cassin

Cathartes Burrovianus Cassin, Proc. Acad. Nat. Sci. Philadelphia, vol. 2, no. 8, March-April 1845, p. 212. (Near Veracruz, Veracruz, México.)

Size small; wing 432 to 459 mm.

Measurements.—Males (10 specimens), wing 432-455 (445.4), tail 195-225 (207.2), culmen from cere 19.6-23.3 (21.3), tarsus 51.1-59.1 (57.1), approximate width of central rectrix 42-49 (46.3) mm.

Females (12 specimens), wing 444-459 (449.3), tail 193-230 (206.8), culmen from cere 21.2-24.0 (22.1), tarsus 56.2-60.0 (58.0), approximate width of central rectrix 43-49 (46.3) mm.

Range.—Eastern México, in Tamaulipas (Tampico; Lomas del Real), Veracruz (Veracruz; Alvarado), and Tabasco (Miramar; Villa Hermosa); British Honduras (Belize); Honduras (Puerto Lampira); Pacific slope of Panamá from Chiriquí (David) through Veraguas (Soná), Coclé (Río Hato; Antón), Herrera (El Rincón; Pesé; Santa María), and Los Santos (Pedasí) to eastern Province of Panamá (La Jagua; Río Chico); Colombia from Atlántico, Magdalena (Santa Marta; Gaira), and Guajira (Maicao) south locally to the upper Río Cauca, upper Patía Valley in Cauca, the upper Magdalena Valley in Huila, and, in the northern llanos, to northern Meta (Quenane); northwestern Venezuela, in Zulia (Encontrados) and Falcón (El Planchón).

There is some seasonal variation in depth of color of the head. An adult female near breeding stage shot on March 24, 1961, at La Jagua, Panamá, had the iris orange-red; center of the crown indigo, in an irregular triangle with the apex forward and the base behind, bordered narrowly on either side by pale greenish blue; side of head, including the loreal area and the base of the mandibular rami, bright orange; the bare foreneck, including the prominent caruncles, dull orange; back of the head dull blue, crossed by three irregular rows of caruncles which are dull orange; bill dull ivory white; crus dull yellowish white; front of tarsus dull greenish gray, rest dull white; toes fuscous black; claws fuscous. In another female, also adult but in resting stage, taken at the Ciénaga Macana, Herrera, March 17, 1948, the iris was red; center of crown and spot in front of the eye dull bluish gray; cere, forepart of crown to center of eyes, nape, back of head, and neck to throat dull orange-red; lores greenish yellow; sides of head from posterior loreal space back around the eye and ear, including the area below the gape, bright orange. A companion bird taken at the same time was slightly duller.

In México and Central America the yellow-headed vulture tends to frequent lowland marshy areas that often are difficult of access. As it is far less common than the red-headed turkey vulture, found everywhere, it may be overlooked since the two are closely similar except in the head color, which is seen only under favorable conditions. Now that attention has been attracted there have been recent reports that have added considerably to the details of range. Dr. and Mrs. Richard R. Graber (1954, pp. 165-166) collected one on July 21,

1953, in Tamaulipas, 8 miles north of Tampico. They recorded others in this general area south of Altamira, and one earlier, on June 19, at Lomas del Real, 30 miles north of Tampico, near the Gulf of México. Recently Col. L. R. Wolfe has sent me the skin of an immature bird taken on March 23, 1964, 18 miles south of Alvarado, in Veracruz.

Specimens lent to me by Dr. George H. Lowery, Jr., from the Museum of Zoology, Louisiana State University, include five from Teapa, Miramar, and Villahermosa, Tabasco, taken in 1959 and 1960; one from Belize, British Honduras, August 26, 1960; and two from Puerto Lampira, Honduras, February 5, 1963. In my work in Panamá I have found the yellow-headed vulture in the lowlands of the Pacific slope from near the Costa Rican boundary to the Province of Panamá near the mouth of the Río Bayano, 25 miles east of the Canal Zone.

In view of the known occurrence of these birds in southern Tamaulipas the possibility that they may range farther north should be kept in mind. In the early period when the identity of Cassin's *Cathartes burrovianus* was not clear Dresser (1865, pp. 322-323) reported a small vulture seen near Brownsville, Tex., that he thought might be this species, but to date there has been no record of it.

The outline of the range of this race in Colombia is taken mainly from discussion by Lehmann and Dugand. Personally I have examined specimens from Bolívar (Simití), Atlántico (Laguna de Guájaro), northern Magdalena (Santa Marta), and Guajira (Maicao).

CATHARTES BURROVIANUS URUBITINGA Pelzeln

Cathartes Urubitinga Pelzeln, Sitzungsab. math.-naturw. Kl. Akad. Wiss. Wien, vol. 44, pt. 1, 1861, p. 7. (Forte do Rio Branco = Forte São Joaquim, Rio Branco, Brazil.)

Cathartes burrovianus dugandi Lehmann, Mus. Hist. Nat. Univ. Cauca Nov. Colombianas, no. 3, Dec. 1, 1957, p. 120. (Caicara, Bolívar, Venezuela.)

Larger, wing 457-509 mm.

Measurements.—Males (27 specimens), wing 457-502 (475.6), tail 205-238 (216.0), culmen from cere 20.5-24.7 (21.9, average of 25), tarsus 56.5-68.8 (60.8), approximate width of middle rectrix 43-50 (46.9) mm.

Females (18 specimens), wing 461-509 (484), tail 204-236 (219), culmen from cere 20.8-23.4 (20.7, average of 17), tarsus 53.2-64.0 (60.0), approximate width of middle rectrix 43-51 (46.2, average of 13) mm.

Range.—From the llanos of southeastern Colombia, central and eastern Venezuela (Caicara, Bolívar; Cantaura, Anzoátegui), British Guiana (Abary, Georgetown), and Surinam (near Paramaribo) through Brazil and Paraguay to northern Argentina (Las Palmas, Chaco; Mocoví, Santa Fè), and Uruguay.

An adult male that I collected on July 20, 1920, near Las Palmas, Chaco, in northern Argentina, had the iris red; side of the head and throat deep chrome yellow shading to olive-buff at base of bill; center of crown dark blue bordered on either side by dark green; a spot of dull slate blue beneath the nostrils; rest of bill cream buff; tarsus cartridge buff, shading to neutral gray on the toes.

Division of this species into two geographic races necessarily is arbitrary since the measurements on which this is based show a cline from the smaller birds of Central America, northern Colombia, and northwestern Venezuela to the larger birds of the rest of South America. This seems justified, however, by the uniformity found within the limits assigned to each group, with a considerable difference between the smaller birds of the north and the larger ones of South America.

The yellow-headed vulture was first reported in Colombia by F. Carlos Lehmann (1940, p. 461) under the name Guala de Cabeza Amarillo, *Cathartes urubitinga* Pelzeln, with specimens listed from Vaupés and Valle del Cauca. In April 1941, in the Guajira Peninsula, Dr. Lehmann and I collected specimens of the yellowhead near Maicao (preserved by Lehmann) and later in April and early May, I saw them near Uribia, Nazaret, and Puerto Estrella. Dugand (1941, p. 54) listed additional records, based in part on specimens and observations by Dr. Lehmann that included the birds from Maicao.

In another account Lehmann (1944, pp. 187-190) gave further details of occurrence that included the presence of these birds at an elevation of 900 meters in the upper valley of the Río Patía, south of Popayán, a stream that flows through Nariño to the Pacific Ocean, and also reported these birds near Cali in the Department of Valle. He noted that they frequented marshy areas and that their main food was fish. In a further paper Dugand (1951, pp. 1-4) noted differences in size and listed the birds as two species under the names *burrovianus* and *urubitinga*. The following year Dugand (1952, pp. 1-4) discussed the question again and treated the two as geographic races of *burrovianus*. It should be noted that in his account and list of material examined some of the specimens were wrongly

identified, as I have found that specimens under *urubitinga* include several *Cathartes aura ruficollis*. Part of his larger birds were the species that is described beyond. Lehmann (1957, pp. 118-121) gave a summary with further details divided under the two subspecies, and in this proposed to separate the two by a third race that he named *Cathartes burrovianus dugandi*, with the type a female in the American Museum of Natural History from Caicara, Bolívar, Venezuela. With recognition of only two races in this species, this name falls under *C. b. urubitinga*.

In June 1954, through the kind attention of Dr. G. Rokitansky I had the opportunity to examine Pelzeln's type material in the Naturhistorisches Museum in Vienna. The specimens in the series include three adult and two immature birds collected by Joh. Natterer between 1817 and 1835. Though at one time four of these specimens had been mounted for exhibition, all were in a fair state of preservation when their age as museum specimens is considered. Three, an adult male, adult female, and one of the immature birds, are labeled from "Forte do Rio Branco, Nord-Bras.," a locality that corresponds to Forte São Joaquim, Rio Branco, in modern Brazil. This is accepted above as the type locality since the others are marked only "Brasilien," as is an adult cotype in the U.S. National Museum, one of the original specimens studied by Pelzeln, received in exchange and entered in our catalog in 1864. My notes on the entire series fully substantiate the name *urubitinga* as applicable to the yellow-headed turkey vulture and to its southern race.

CATHARTES MELAMBROTUS sp.nov.: Greater Yellow-headed Vulture.

Characters.—With prominent caruncles on the neck, and head color, as in *Cathartes burrovianus* Cassin, but size definitely larger; tail decidedly longer with broader rectrices, the central pair especially much wider; plumage entirely deep black with greenish and purplish sheen, without mixture of brown in the wing coverts, or elsewhere.

Description.—Type, U.S.N.M. no. 483532, male (fully adult), collected by Pinney Schiffer at Kartabo, British Guiana, January 15, 1930. Plumage deep black throughout, with an iridescent sheen, greenish in the main, but in part dull bluish with the light at certain angles; under surface of wings and tail dull dark brownish gray; concealed down pure white.

Measurements.—Males (9 specimens), wing 488-530 (505.7, average of 8); tail 252-275 (264.4); culmen from cere 23.2-26.2 (24.6,

average of 8); tarsus 68.5-75.1 (70.7); approximate width of central rectrix 59-70 (63.4) mm.

Females (3 specimens), wing 510-512 (511, average of 2); tail 272-285 (279), culmen from cere 23.9-25.5 (24.6), tarsus 69.3-72.5 (70.9); approximate width of central rectrix 60-67 (64.3) mm.

Type, male, wing 508, tail 272, culmen from cere 26.2, tarsus 68.5, approximate width of central rectrix 63 mm.

A color photograph of a recently killed adult male, taken by John P. O'Neill at Tingo María, Perú, July 1, 1962, shows clearly that the iris was red; bill flesh color; side of the head and throat deep yellow to light orange; and the crown and a spot in front of the eye deep blue.

Range.—From southeastern Colombia (Río Vaupés), the Río Orinoco in southern and eastern Venezuela (Isla Corocoro, Amazonas; Piacoa, Delta Amacuro), British Guiana (Kartabo; Rockstone; Kamakuna), and Surinam (Keiserberg Airstrip; Wilhelmina Mountains), to eastern Perú (Río Curanjá, Loreto; Tingo María, Huánuco) and central Pará in northern Brazil (Tauary on the Rio Tapajós; Tapara on the Rio Xingú).

Remarks.—As my studies of specimens of the yellow-headed vultures progressed it became evident that there were occasional specimens that did not agree with the usual pattern of *Cathartes burrovianus* in size and color. In fact, certain birds were definitely troublesome in attempts to outline characters under which this species could be recognized. The first of these aberrant individuals was a skin in the American Museum of Natural History, an adult female of unknown locality that had died in captivity at the New York Zoological Society zoo on December 23, 1918. Presently I saw another of similar form in the Museum of Comparative Zoology, and later others in the Chicago Natural History Museum. At first I supposed that these might be the bird described briefly by Sharpe (1874, p. 26) as *Oenops pernigra*, but in due course when I saw this type it proved to be an individual of *Cathartes aura ruficollis*. There remained the possibility then that they were *Cathartes urubitinga*, named by Pelzeln from northern Brazil, but when I visited the Naturhistorisches Museum in Vienna I found that the type series were all individuals with duller color of *burrovianus*, and with the size of the southern population of that species listed above under Pelzeln's name as *Cathartes burrovianus urubitinga*. It became obvious then that the larger birds represented a distinct group that has been overlooked. Since their known range is included within that of *C. b. urubitinga* they must be regarded as a distinct species.

For the extension of range to eastern Perú I am indebted to John P. O'Neill and Dr. George H. Lowery, Jr. It is probable that this species ranges also to northeastern Bolivia.

KEY TO THE SPECIES OF THE GENUS CATHARTES

1. Bare skin of the side and front of the neck at the base smooth; upper hind-neck in adult not feathered; bare skin of head and upper neck in adult birds in life dull red, usually plain, but in the subspecies *ruficollis* with several narrow lines of yellowish or greenish white across the back of the cranium. *Cathartes aura*

Bare skin of the side and front of the neck at the base with numerous caruncles, prominent in life; in museum specimens visible as small, wart-like projections; hindneck in adult feathered to near the base of the cranium; bare skin of head and upper neck in adult birds in life yellow and orange varied by markings of blue. 2

2. Back and wings with many feathers tipped and edged prominently with dull grayish brown; under surface more brownish black; definitely smaller, with tail shorter, not more than 240 mm. long; rectrices, especially the central pair, less than 52 mm. wide. *Cathartes burrovianus*

Plumage deep black throughout, with prominent greenish or bluish reflections; decidedly larger, with tail longer, 250 to 280 mm. or more; rectrices, especially the central pair, 59-70 mm. wide. . . *Cathartes melambrotus* sp. nov.

Details of the characters that mark subspecies are given in the main text.

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